Missouri Department of Natural Resources

PUBLIC NOTICE

DRAFT MISSOURI STATE OPERATING PERMIT

DATE: October 8, 2004

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources (MDNR), as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed permit conditions are invited to submit them in writing to the Department of Natural Resources, St. Louis Regional Office, 7545 South Lindbergh, Suite 210, St. Louis, Missouri 63125, ATTN: Thomas M. Siegel, Chief, Permits and Engineering. Please include the permit number in all comment letters.

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The MDNR may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be postmarked by November 7, 2004 or received by 5:00 p.m. on November 10, 2004. The requirement of a signed document makes it impossible to accept email comments for consideration at this time. Comments will be considered in the formulation of all final determinations regarding the applications. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits and other information including copies of applicable regulations are available for inspection and copying at DNR's website, http://www.dnr.state.mo.us/wpscd/wpcp/homewpcp.htm , or at the Department of Natural Resources, St. Louis Regional Office, 7545 S. Lindbergh, Suite 210, St. Louis, Missouri 63125, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

Public Notice Date: October 8, 2004 Permit Number: MO-0039659 St. Louis Regional Office	
FACILITY NAME AND ADDRESS	**NAME AND ADDRESS OF OWNER**
Eureka Wastewater Treatment Facility Augustine Road Eureka, MO 63025	City of Eureka 100 City Hall Drive Eureka, MO 63025
RECEIVING STREAM & LEGAL DESCRIPTION	**TYPE OF DISCHARGE**
Meramec River (P) SE ¼, SE ¼, Sec. 30, T44N, R4E, St. Louis County	Domestic, new facility

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0039659
Owner:	City of Eureka
Address:	100 City Hall Dr., Eureka, MO 63025
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	Eureka Wastewater Treatment Facility
Facility Address:	August[illegible] Eureka, MO 63025
Legal Description:	See page 2
Latitude/Longitude:	See page 2
Receiving Stream:	See page 2
First Classified Stream and ID:	See page 2
USGS Basin & Sub-watershed No.:	See page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

FACILITY DESCRIPTION – See Page 2

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

Effective Date

Stephen M. Mahfood, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

Expiration Date

Mohamad Alhalabi, Director, St. Louis Regional Office

Outfall #001 – POTW – SIC #4952 (No longer in use/to be closed.)

Facility Description: Three-cell aerated lagoon/sludge retained in lagoon.
Design Population: 5,000.
Design Flow: 0.5 MGD.
Legal Description: (NE ¼, NW ¼, Sec. 6 (projected)), T43N, R4E, St. Louis County
Receiving Stream: Flat Creek (P)
First Classified Stream and ID: Flat Creek (P) (#3593)
USGS Basin & Sub-watershed No.: (07140102-080001)

Outfall #002 – POTW – SIC #4952 (No longer in use/to be eliminated.)

Facility Description: Contact stabilization/aerated sludge holding tank/sludge is land applied.
Design Population: 5,000.
Design Flow: 0.5 MGD.
Legal Description: (NE ¼, NW ¼, Sec. 6 (projected)), T43N, R4E, St. Louis County
Receiving Stream: Flat Creek (P)
First Classified Stream and ID: Flat Creek (P) (#3593)
USGS Basin & Sub-watershed No.: (07140102-080001)

Outfall #003 – POTW – SIC #4952 (No longer in use/to be eliminated.)

Facility Description: Combined outfalls #001 & #
Design Population: 10,000.
Design Flow: 1.0 MGD.
Legal Description: (NE ¼, NW ¼, Sec. 6 (projected), T43N, R4E, St. Louis County
Receiving Stream: Flat Creek (P)
First Classified Stream and ID: Flat Cr (#3593)
USGS Basin & Sub-watershed No. (07140102-080001)

Outfall #004 – POTW – SIC #

Facility Description: Aera lagoon/UV disinfection/sludge stored in lagoon.
Design Population: 2 0
Design Flow: 2.8 MGD
Design Sludge production is 400 dry tons
Legal Description: SE ¼, SE ¼, Sec. 30, T44N, R4E, St. Louis County
Latitude/Longitude: 3831005/-09036388
Receiving Stream: Meramec River (P)
First Classified Stream and ID: Meramec River (P) (#2185)
USGS Basin & Sub-watershed No.: (07140102-080001)

Outfall #005 – Stormwater runoff – Influent L.S. –SIC #4952

Design Flow: Dependent upon precipitation.
Legal Description: (NE ¼, NW ¼, Sec. 6 (projected)), T43N, R4E, St. Louis County
Latitude/Longitude: 3829570/-09037255
Receiving Stream: Flat Creek (P)
First Classified Stream and ID: Flat Creek (P) (#3593)
USGS Basin & Sub-watershed No.: (07140102-080001)

Outfall #006 – Stormwater runoff – Effluent L.S. –SIC #4952

Design Flow: Dependent upon precipitation.
Legal Description: (NE ¼, NW ¼, Sec. 6 (projected)), T43N, R4E, St. Louis County
Latitude/Longitude: 3830064/-09037085
Receiving Stream: Flat Creek (P)
First Classified Stream and ID: Flat Creek (P) (#3593)
USGS Basin & Sub-watershed No.: (07140102-080001)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

(OUTFALL NUMBER AND EFFLUENT PARAMETERS)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #004						
Flow	MGD	*		*	Daily	24 hr. total
Biochemical Oxygen Demand$_5$**	mg/L		45	30	Once/week	Grab
Total Suspended Solids**	mg/L		45	30	Once/week	Grab
Ammonia Nitrogen (as N) (May 1 through October 31)	mg/L	23.3		11.6	Once/week	Grab
Ammonia Nitrogen (as N) (Nov 1 through April 30)	mg/L	47.6		23.7	Once/week	Grab
pH	SU	***		***	Once/week	Grab
Fecal Coliform****	Colonies /100 ml	1000		400	Once/week	Grab
Total Nitrogen	mg/L	*		*	Once/month	Grab
Total Phosphorous	mg/L	*		*	Once/month	Grab

MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE _____ . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

Whole Effluent Toxicity (WET) Test	Percent Survival	See Special Condition 12	Once/year in April	Grab

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE _____ . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

* Monitoring requirement only.
** This facility is required to meet a removal efficiency of 85 percent or more.
*** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
**** Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season from April 1 through October 31.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

(OUTFALL NUMBER AND EFFLUENT PARAMETERS)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Outfall #005 – Stormwater runoff (Note 1)						
Biochemical Oxygen Demand$_5$	mg/L	*		*	Once/year*****	Grab
Settleable Solids	mL/L	1.5		1.0	Once/year*****	Grab
pH***	SU	***		***	Once/year*****	Grab
Oil & Grease	mg/L	15		10	Once/year*****	Grab
Outfall #006 – Stormwater runoff (Note 1)						
Biochemical Oxygen Demand$_5$	mg/L	*		*	Once/year*****	Grab
Settleable Solids	mL/L	1.5		1.0	Once/year*****	Grab
pH***	SU	***		***	Once/year*****	Grab
Oil & Grease	mg/L	15		10	Once/year*****	Grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE _____ . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

* Monitoring requirement only.
*** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
***** Sample once per year in April.

Note 1 – A representatve grab sample shall be collected during the first hour of rainfall which exceeds 0.1 inch and results in a discharge.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

(OUTFALL NUMBER AND EFFLUENT PARAMETERS)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Instream Site S1 – Note 2						
Temperature	^{0}C			*	Once/quarter*****	Grab
pH	SU			*	Once/quarter*****	Grab
Dissolved Oxygen	mg/L			*	Once/quarter*****	Grab
Ammonia Nitrogen (as N)	mg/L			*	Once/quarter*****	Grab
Settleable Solids	mL/L			*	Once/quarter*****	Grab
Total Nitrogen (as N)	mg/L			*	Once/quarter*****	Grab
Total Phosphorous (as P)	mg/L				Once/quarter*****	Grab
Downstream monitoring – Note 3						
Temperature	^{0}C			*	Once/quarter*****	Grab
pH	SU			*	Once/quarter*****	Grab
Dissolved Oxygen	mg/L			*	Once/quarter*****	Grab
Ammonia Nitrogen (as N)	mg/L			*	Once/quarter*****	Grab
Settleable Solids	mL/L			*	Once/quarter*****	Grab
Total Nitrogen (as N)	mg/L			*	Once/quarter*****	Grab
Total Phosphorous (as P)	mg/L			*	Once/quarter*****	Grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE _____ . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (Continued)

* Monitoring requirement only.
***** Sample once per quarter in the months of February, May, August, and November.

Note 2 - Sample upstream of outfall in middle of river before it mixes with the discharge from the outfall at approximately one-half river depth.
Note 3 - Sample approximately 0.25-mile downstream in middle of river at approximately one-half river depth.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I, II & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

C. SPECIAL CONDITIONS

1. All outfalls must be clearly marked in the field.

2. Report as no-discharge when a discharge does not occur during the report period.

3. Permittee will cease discharge by connection to areawide wastewater treatment system within 90 days of notice of its availability

4. Sludge and Biosolids Use for Domestic Wastewater Treatment Facilities.
   a. Permittee shall comply with the pollutant limitations, monitoring, reporting, and other requirements in accordance with the attached permit Standard Conditions.
   b. If sludge is not removed by a contract hauler, permittee is authorized to land apply biosolids that are removed from the domestic wastewater treatment lagoon during lagoon clean-out and maintenance activities. Permit Standard Conditions, Part III shall apply to the land application of biosolids. Permittee shall notify the department at least 180 days prior to the planned removal of biosolids from the lagoon. The department may require submittal of a biosolids management plan for department review and approval as determined appropriate on a case-by-case basis.

5. General Criteria. The following water quality criteria shall be applicable to all waters of the state at all times including mixing zones. No water contaminant, by itself or in combination with other substances, shall prevent the waters of the state from meeting the following conditions:
   a. Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses;
   b. Waters shall be free from oil and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses;
   c. Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses;
   d. Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life;
   e. There shall be no significant human health hazard from incidental contact with the water.
   f. There shall be no acute toxicity to livestock or wildlife watering;
   g. Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community;
   h. Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247.

C. SPECIAL CONDITIONS (Continued)

6. Changes in Discharges of Toxic Substances. The permittee shall notify the Director as soon as it knows or has reason to believe:
   a. That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
      (1) One hundred micrograms per liter (100 µg/L);
      (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
      (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
      (4) The level established in Part A of the permit by the Director.
   b. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

7. Requirements for Stormwater Outfalls. These requirements do not supersede nor remove liability for compliance with county and other local ordinances.
   a. Store all process materials, paint, solvents, petroleum products and petroleum waste products (except fuels), and storage containers (such as drums, cans, or cartons) so that these materials are not exposed to storm water or provide other prescribed Best Management Practices such as plastic lids and/or portable spill pans to prevent the commingling of storm water and container contents. Commingled water may not be discharged under this permit. Provide spill prevention, control, and/or containment sufficient to prevent any spills of these pollutants from entering waters of the state. Any containment system used to implement this requirement shall be constructed of materials compatible with the substances contained and also prevent the contamination of groundwater.
   b. Good housekeeping practices shall be maintained on the site to keep solid waste from entry into waters of the state.
   c. All fueling facilities present on the site shall adhere to applicable federal and state regulations concerning underground storage, above ground storage, and dispensers, including spill prevention, control and counter measures.
   d. Substances regulated by federal law under the Resource Conservation and Recovery Act (RCRA) or the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that are transported, stored, or used for maintenance, cleaning or repair shall be managed accordingly to the provisions of RCRA or CERCLA.
   e. Designate an individual as responsible for environmental matters. Provide for weekly inspection by facility staff of any structures that function to prevent pollution of storm water or to remove pollutants from storm water and of the facility in general to ensure that any Best Management Practices are continually implemented and effective. Records of inpsections must be kept onsite and made available to the Department upon request.
   f. Train all involved personnel in material handling and storage, and housekeeping of maintenance areas. Proof of training shall be submitted on request to the Department.
   g. All testing required by EPA Form 2F shall be conducted and submitted with the first quarterly report. This permit may be modified based on testing results.

C. SPECIAL CONDITIONS (Continued)

8. This permit may be reopened and modified, or alternatively revoked and reissued, to:
   a. Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
      (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
      (2) controls any pollutant not limited in the permit.
   b. Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test, or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.
9. The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

8. Whole Effluent Toxicity (WET) tests shall be conducted as follows:

FREQUENCY OF WET TESTING FOR THIS PERMIT				
OUTFALL	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
004	36 %	Once/year	Grab	August

   a. Test Schedule and Follow-Up Requirements

      (1) Perform a single-dilution test in the months and at the frequency specified above. If the effluent passes the test, do not repeat the test until the next test period. Submit test results along with complete copies of the test reports as received from the laboratory within 30 calendar days of availability to the WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102.

      (2) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days, and biweekly thereafter, until one of the following conditions are met:
         (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
         (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

      (3) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.

C. SPECIAL CONDITIONS (Continued)

(4) Additionally, the following shall apply upon failure of the third test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact WPP, Water Quality Monitoring and Assessment Section to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPP within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.

(5) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.

(6) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.

(7) All failing test results shall be reported to WPP, Water Quality Monitoring and Assessment Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.

(8) When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.

(9) Submit a concise summary of all test results with the annual report.

b. PASS/FAIL procedure and effluent limitations:

(1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; p = 0.05) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.

(2) To pass a multiple-dilution test:
(a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; or,
(b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is an effluent limit violation.

C. SPECIAL CONDITIONS (Continued)

c. Test Conditions

(1) Test Type: Acute Static non-renewal

(2) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.

(3) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.

(4) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.

(5) Single-dilution tests will be run with:
(a) Effluent at the AEC concentration;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(6) Multiple-dilution tests will be run with:
(a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
(b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
(c) reconstituted water.

(7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR,the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at p≤ 0.05)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at p≤ 0.05)
Test Acceptability criterion:	90% or greater survival in controls

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless otherwise specified by MDNR, procedures should be consistent with Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, EPA/600/4-90/027.

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (4 x 5)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$)
Test acceptability criteria:	90% or greater survival in controls

Test conditions for Pimephales promelas (Fathead minnow):

Test duration:	48 h
Temperature:	25 ± 2°C
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Mortality (Statistically significant difference from upstream receiving water control at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls

Date of Public Notice: October 8, 2004

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
FACT SHEET

This Fact Sheet explains the applicable regulations, rationale for development of this permit and the public participation process.

NPDES PERMIT NUMBER: MO-0039659

FACILITY NAME: City of Eureka WWTF

OWNER NAME: City of Eureka

LOCATION: SE ¼, SE ¼, Sec. 10, T44N, R4E, St. Louis County

RECEIVING STREAM: Meramec River (P)

FACILITY CONTACT PERSON: Michael Schlereth, Director of Public Works

FACILITY DESCRIPTION AND RATIONALE

The City of Eureka has constructed a new wastewater treatment facility to replace their existing 0.5 MGD aerated lagoon and 0.5 MGD contact stabilization treatment plant. The new facility is a three-cell aerated lagoon and is designed to treat 2.8 MGD. The effluent will be disinfected by UV light prior to discharge. The treated effluent will be discharged into the Meramec River via a new force main. The existing discharge to Flat Creek will be eliminated upon startup of the new aerated lagoon and the old wastewater lagoon and mechanical treatment facilities will be closed in accordance with an approved closure plan.

EFFLUENT LIMITATIONS

Outfalls #001 through #003 are associated with the existing treatment facilities and will cease to exist after the new wastewater treatment system is completed. Outfall #004 is the discharge to the Meramec River and the following effluent limits will apply.

Parameter	Units	Daily Maximum	Weekly Average	Monthly Average	Measurement Frequency
Flow	MGD	*		*	daily
Biochemical Oxygen Demand$_5$**	mg/L		45	30	once/week
Total Suspended Solids**	mg/L		45	30	once/week
Ammonia Nitrogen (May 1 – Oct 31)	mg/L	23.3		11.6	once/week
Ammonia Nitrogen (Nov 1 – Apr 30)	mg/L	47.6		23.7	once/week
pH	SU	***		***	once/week
Fecal Coliform****	#/100mL	1000		400	once/week
Total Nitrogen	mg/L	*		*	once/month
Total Phosphorous	mg/L	*		*	once/month

* Monitoring only.
** This facility is required to meet a removal efficiency of 85 percent or more.
*** pH shall be maintained between 6.0 and 9.0 pH units.
**** Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season for April 1 through October 31.

Outfalls #005 & #006

Samples of stormwater runoff are to be collected once per year at two locations. Outfall #005 is the runoff from the area near the influent lift station. Outfall #006 is the runoff from the effluent lift station.

Parameter	Units	Daily Maximum	Weekly Average	Monthly Average	Measurement Freguency
Biochemical Oxygen Demand$_5$	mg/L	*		*	once/quarter**
Settleable Solids	mL/L	1.5		1.0	once/quarter**
pH	SU	***		***	once/quarter**
Oil & Grease	mg/L	15		10	once/quarter**

* Monitoring only.
** Sample once per year in April.
*** pH shall be maintained between 6.0 and 9.0 pH units.
**** Final limitations and monitoring requirements for Fecal Coliform are applicable only during the recreational season for April 1 through October 31.

Instream Monitoring

The permittee is required to collect samples in the Meramec River upstream and downstream of the discharge location. The upstream sample is to be collected in the middle of the river at approximately one-half river depth. The downstream sample is to be collected approximately 0.25 mile downstream in the middle of the river at approximately one-half river depth.

Parameter	Units	Daily Maximum	Weekly Average	Monthly Average	Measurement Freguency
Temperature	°C	*		*	once/quarter**
pH	SU	*		*	once/quarter**
Dissolved Oxygen	mg/L	*		*	once/quarter**
Ammonia Nitrogen	mg/L	*		*	once/quarter**
Total Suspended Solids	mg/L	*		*	once/quarter**
Total Nitrogen	mg/L	*		*	once/quarter**
Total Phosphorous	mg/L	*		*	once/quarter**

* Monitoring only.
** Sample once per quarter in the months of February, May, August, and November.

Facility Operation

The City of Eureka will operate this facility with trained personnel in the Public Works office. All operational staff have at the minimum a Class "C" wastewater license. Personnel are available at the treatment facility during week days and on weekends when necessary.

This permit will be issued for a period of five years

Missouri Department of Natural Resources
Water Protection Program
Water Pollution Control Branch
NPDES Permits & Engineering Section

Water Quality Review Sheet
Determination of Effluent Limits

Facility Information

FACILITY NAME: Eureka Sewage Treatment Plant NPDES #: MO-0039659

FACILITY TYPE/DESCRIPTION: Proposed 2.8 MGD aerated lagoon (facility expansion)

ECOREGION: Ozark Highlands (Central Irregular Plains, Mississippi Alluvial Plains, Osage Plains, Ozark Highlands) 8- DIGIT HUC: 07140102 COUNTY: St. Louis

LEGAL DESCRIPTION: NE NE Sec 31, T44N, R4E LATITUDE/LONGITUDE: New Outfall Location

WATER QUALITY HISTORY: Failure of WET test in 1999 is believed to be due to ammonia toxicity. DMRs indicate continuously high ammonia concentrations in effluent.

Outfall Characteristics

OUTFALL	DESIGN FLOW (CFS)	TREATMENT TYPE	RECEIVING WATERBODY	OTHER
004	4.34	Aerated Lagoon	Meramec River	

Receiving Waterbody Information

WATERBODY	CLASS	7Q10 (CFS)	*DESIGNATED USES	OTHER CHARACTERISTICS
Meramec River	P	306	AQL, CLF, IND, BTG, DWS, LWW, WBC	WBID: 2185

*Cool Water Fishery (CLF), Cold Water Fishery (CDF), Irrigation (IRR), Industrial (IND), Boating & Canoeing (BTG), Drinking Water Supply (DWS), Whole Body Contact Recreation (WBC), Protection of Warmwater Aquatic Life and Human Health (AQL), Livestock & Wildlife Watering (LWW)

COMMENTS: City wants to expand facility and change current outfall location from Flat Creek to Meramec River. Current outfall location on Flat Creek has led to 305(b) designation of the stream not supporting beneficial uses. There are three outfalls listed on Flat River Creek, so the proposed outfall is labeled as 004. Ultraviolet Disinfection (UV) is also being added.

MIXING CONSIDERATIONS

7Q10 Calculation: USGS stream gauge data were used to calculate the seven (7)-day one (1)-in-ten (10)-year low flow (7Q10) for the Meramec River near Eureka, MO. The 7Q10 of a stream is the average minimum flow for seven (7) consecutive days that has a probable recurrence interval of once-in-ten (10) years.

All available data from USGS-07019000 were used to generate 7-day low-flow values using the USGS SWSTAT 4.1 surface water statistics program. The resulting 7-day low-flows were fitted using the Log-Pearson Type III frequency distribution. A 7Q10 value of 306 cubic feet/second (cfs) was determined from this analysis (Appendix A.)

Mixing Zone (MZ). One-quarter (1/4) of the stream volume of flow; length one-quarter (1/4) mile [10 CSR 20-7.031(4)(A)5.B.(III)(a)]. MZ Volume of Flow = 76.5 cfs, Dilution Factor = 18.6:1

Zone of Initial Dilution (ZID). One-tenth (0.1) of the mixing zone width volume of flow [10 CSR 20-7.031(4)(A)5.B.(III)(b)]. ZID Volume of Flow = 7.65 cfs, Dilution Factor = 2.8:1

Permit Limits And Information

TMDL Watershed: (Y or N) [N] W.L.A. Study Conducted: (Y or N) [N] Disinfection Required: (Y or N) [Y] Disinfection Waiver: (Y, N, NA) [N]

OUTFALL# 004

Wet Test (Y or N): [Y] Frequency: Once/year A.E.C. 36% Limit: No significant mortality

PARAMETER	Units	Maximum Daily Limit	Weekly Average Limit	Average Monthly Limit	Monitoring Frequency	Sample type
Biochemical Oxygen Demand (BOD_5)	mg/L		45	30	WEEKLY	grab
Non-Filterable Residue	mg/L		45	30	WEEKLY	grab
pH	SU	6 – 9		6 – 9	WEEKLY	grab
Fecal Coliform	Col./100mL	1000		400	WEEKLY	grab
Ammonia as N (Summer)[1]	mg/L	23.3		11.6	WEEKLY	grab
Ammonia as N (Winter)[1]	mg/L	47.6		23.7	WEEKLY	grab
Total Nitrogen	mg/L			*	Monthly	grab
Total Phosphorous	mg/L			*	Monthly	grab

*** – Monitoring Requirement Only**

1 – Summer (Apr 1 – Oct 31) and Winter (Nov 1 – Mar 31) seasons taken from previous version of WQRS [M. Osborn, Date: 1/14/02, Revised: 2/28/03]

Receiving Water Monitoring Requirements

Site S1.

Parameter(s)	Sampling Frequency	Sample Type	Location
Dissolved Oxygen	Once/quarter	Grab	Immediately upstream of outfall
Ammonia Nitrogen	Once/quarter	Grab	
Non-filterable residue	Once/quarter	Grab	
Total nitrogen	Once/quarter	Grab	
Total Phosphorus	Once/quarter	Grab	

Site S2.

Parameter(s)	Sampling Frequency	Sample Type	Location
Dissolved Oxygen	Once/quarter	Grab	One-quarter (¼) mile downstream of outfall
Ammonia Nitrogen	Once/quarter	Grab	
Non-filterable residue	Once/quarter	Grab	
Total nitrogen	Once/quarter	Grab	
Total Phosphorus	Once/quarter	Grab	

Derivation and Discussion of Limits

Wasteload allocations were calculated using water quality criteria and the dilution equation below:

$$C = \frac{(C_s * Q_s) + (C_e * Q_e)}{(Q_e + Q_s)}$$ (EPA/505/2-90-001, Section 4.5.5)

Where C = downstream concentration
C_s = upstream concentration
Q_s = upstream flow (cfs)
C_e = effluent concentration
Q_e = effluent flow (cfs)

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable acute water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality based maximum daily and monthly average effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

- **Biochemical Oxygen Demand (BOD_5)**. 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1.]

- **Non-Filterable Residue (NFR)**. 30 mg/L monthly average, 45 mg/L weekly average [10 CSR 20-7.015(8)(B)1.]

- **pH**. pH shall be maintained in the range from six to nine (6 – 9) standard units [10 CSR 20-7.015(8)(B)2.]

- **Fecal Coliform**. 400 colonies/100 mL monthly average, 1000 colonies/100 mL daily maximum [10 CSR 20-7.015(8)(B)4.A.]

- **Ammonia as Nitrogen**. Due to the absence of ammonia criteria for waters designated as cool-water fisheries in Missouri's Water Quality Standards, general warm-water fishery ammonia criteria should apply [10 CSR 20-7.031, Table B]. Background Ammonia as Nitrogen for the Meramec River near Eureka, MO = 0.25 mg/L

Season	Temp (°C)	pH (SU)	Total Ammonia CCC (mg/L)	Total Ammonia CMC (mg/L)
Summer	26	7.8	1.2	14.0
Winter	6	7.8	2.1	16.4

$C_e = ((Q_e + Q_s)C - (C_s * Q_s))/Q_e$

Summer

Ammonia as Nitrogen CCC = 1.2/1.2 = 1.0 mg/L
Ammonia as Nitrogen CMC = 14.0/1.2 = 11.7 mg/L

Chronic WLA: C_e = ((4.34 + 76.5)1.0 – (76.5 * 0.25))/4.34
C_e = 14.2 mg/L

Acute WLA: C_e = ((4.34 + 7.65)11.7 – (7.65 * 0.25))/4.34
C_e = 31.9 mg/L

LTA_c = 14.2 mg/L (0.527) = 7.48 [CV = 0.6, 99th Percentile]

MDL = 7.48 * 3.11 = 23.3 mg/L [CV = 0.6, 99th Percentile]
AML = 7.48 * 1.55 = 11.6 mg/L [CV = 0.6, 95th Percentile, n = 4]

Winter

Ammonia as Nitrogen CCC = 2.1/1.2 = 1.8 mg/L
Ammonia as Nitrogen CMC = 16.4/1.2 = 13.7 mg/L

Chronic WLA: C_e = ((4.34 + 76.5)1.8 – (76.5 * 0.25))/4.34
C_e = 29.1 mg/L

Acute WLA: C_e = ((4.34 + 7.65)13.7 – (7.65 * 0.25))/4.34
C_e = 37.4 mg/L

LTA_c = 29.1 mg/L (0.527) = 15.3 [CV = 0.6, 99th Percentile]

MDL = 15.3 * 3.11 = 47.6 mg/L [CV = 0.6, 99th Percentile]
AML = 15.3 * 1.55 = 23.7 mg/L [CV = 0.6, 95th Percentile, n = 4]

Season	Maximum Daily Limit (mg/L)	Average Monthly Limit (mg/L)
Summer	23.3	11.6
Winter	47.6	23.7

Reviewer: John Hoke
Date: 2/19/04
Unit Chief: Richard J. Laux

Monitoring and effluent limits contained within this document have been developed in accordance with EPA guidelines using the best available data and are believed to be consistent with Missouri's Water Quality Standards and Effluent Regulations. If additional water quality data or anecdotal information are available that may affect the recommended monitoring and effluent limits, please forward these data and information to the author.

Appendix A.

Log-Pearson Type III Statistics
SWSTAT 4.1
(based on USGS Program A193)

Notice -- Use of Log-Pearson Type III or Pearson-Type III distributions are for preliminary computations. User is responsible for assessment and interpretation.

USGS-07019000 Meramec River near Eureka, MO
April 1 - start of season
March 31 - end of season
1905 - 2002 - time period
7-day low - parameter
82 - non-zero values
0 - zero values
16 - negative values (ignored)

640.000	880.000	391.429	505.714	549.286
387.286	427.143	581.429	622.143	560.429
340.714	350.143	326.429	448.000	234.429
602.857	209.286	393.857	386.857	452.571
365.000	372.571	479.857	489.000	434.000
522.000	511.143	497.857	467.429	682.571
779.857	1138.571	513.429	281.571	228.857
271.571	209.286	475.857	571.143	361.000
373.000	541.857	402.429	304.429	315.714
305.429	364.286	392.286	504.714	602.857
624.143	453.000	522.571	630.429	591.000
613.143	318.286	490.143	307.143	464.143
340.000	695.714	768.714	510.571	519.714
841.714	589.571	482.143	463.429	491.429
699.000	534.857	439.571	1015.714	629.857
549.857	602.714	637.000	715.000	521.571
383.429	471.286			

The following 7 statistics are based on non-zero values:

Mean (logs)	2.675
Variance (logs)	0.021
Standard Deviation (logs)	0.146
Skewness (logs)	-0.162
Standard Error of Skewness (logs)	0.266
Serial Correlation Coefficient (logs)	0.392
Coefficient of Variation (logs)	0.055

Appendix A (Cont).

Non-exceedance Probability	Recurrence Interval	Parameter Value
0.0100	100.00	208.087
0.0200	50.00	230.550
0.0500	20.00	268.163
0.1000	10.00	305.892
0.2000	5.00	357.571
0.3333	3.00	411.818
0.5000	2.00	477.234
0.8000	1.25	628.819
0.9000	1.11	722.690
0.9600	1.04	835.134
0.9800	1.02	915.041
0.9900	1.01	992.078

12 statistics were added as attributes to data set 504:

MEANND SDND SKWND NUMZRO NONZRO LDIST
L07100 L07050 L07020 L07010 L07005 L07002